

In re Patent Application of:  
**VIGIL**  
Serial No. 09/866,539  
Filing Date: MAY 25, 2001

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**In the Claims:**

Claims 1-21 (Cancelled).

22. (Original) A method for simultaneously demodulating a plurality of received digitally modulated signals subjected to multipath propagation impairments, the method comprising:

estimating the multipath propagation impairments of the plurality of received digitally modulated signals;

estimating at least one symbol of each of the plurality of received digitally modulated signals;

adjusting each of the at least one estimated symbols based upon the corresponding estimated multipath propagation impairment to generate an estimate of each of the at least one symbols as impaired by the corresponding multipath propagation;

generating at least one error signal by comparing a summation of the estimates of the at least one symbols as impaired by the corresponding multipath propagation to the plurality of received digitally modulated signals; and

using the at least one error signal for estimating remaining symbols of each of the plurality of received digitally modulated signals to be demodulated.

23. (Original) A method according to Claim 22, further comprising using the at least one error signal for refining each estimated multipath propagation impairment.

24. (Original) A method according to Claim 23, further comprising:

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estimating at least one next symbol of each of the plurality of received digitally modulated signals; and

adjusting the estimates of each of the at least one next symbols based upon the corresponding refined estimated multipath propagation impairment for generating estimates of the at least one next symbols as impaired by the corresponding multipath propagation.

25. (Original) A method according to Claim 24, further comprising refining the at least one error signal by comparing a summation of estimates of the at least one next symbols as impaired by the corresponding multipath propagation to the plurality of received digitally modulated signals.

26. (Original) A method according to Claim 25, wherein refining the at least one error signal further comprises comparing the summation of estimates of the at least one next symbols as impaired by the corresponding multipath propagation to the at least one error signal resulting from at least one previous comparison.

27. (Original) A method according to Claim 22, wherein estimating the multipath propagation impairments of each of the plurality of received digitally modulated signals is based upon a respective adaptive algorithm.

28. (Original) A method according to Claim 22, wherein estimating the at least one symbol of each of the plurality of received digitally modulated signals is based upon a respective adaptive algorithm.

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29. (Original) A method according to Claim 22, wherein estimating the multipath propagation impairments is based upon training waveforms embedded in the plurality of received digitally modulated signals.

30. (Original) A method according to Claim 22, wherein estimating each of the at least one symbols is based upon training waveforms embedded in the plurality of received digitally modulated signals.

31. (Original) A method according to Claim 22, wherein estimating the remaining symbols of each of the plurality of received digitally modulated signals to be demodulated is based upon linear estimation.

32. (Original) A method according to Claim 22, wherein the plurality of received digitally modulated signals comprises at least one of a digital broadcast television signal, a digital broadcast radio signal, a digital cellular telephone signal, and a digital wireless local area network (LAN).

33. (Original) A method according to Claim 22, wherein each of the plurality of received digitally modulated signals comprises a digitally serial modulated signal.

Claims 34-47 (Cancelled).

48. (Original) A digital receiver for simultaneously

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demodulating a plurality of received digitally modulated signals subjected to multipath propagation impairments, the digital receiver comprising:

    a plurality of channel estimators for estimating the multipath propagation impairments of the plurality of received digitally modulated signals;

    a plurality of symbol estimators connected to said plurality of channel estimators for estimating at least one symbol of each of the plurality of received digitally modulated signals, said plurality of channel estimators for adjusting each of the at least one estimated symbols based upon corresponding estimated multipath propagation impairments to generate an estimate of each of the at least one symbols as impaired by the multipath propagation; and

    a summing network connected to said plurality of channel estimators and to said plurality of symbol estimators for generating at least one error signal by comparing a summation of estimates of the at least one symbols as impaired by the corresponding multipath propagation to the plurality of received digitally modulated signals;

    said plurality of symbol estimators using the at least one error signal for estimating remaining symbols of each of the plurality of received digitally modulated signals to be demodulated.

49. (Original) A digital receiver according to Claim 48, wherein said plurality of channel estimators uses the at least one error signal for refining each estimated multipath propagation impairment.

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50. (Original) A digital receiver according to Claim 49, wherein said plurality of symbol estimators estimates at least one next symbol of each of the plurality of received digitally modulated signals, and adjusts the estimates of each of the at least one next symbols based upon the refined corresponding estimated multipath propagation impairment for generating estimates of the at least one next symbols as impaired by the corresponding multipath propagation.

51. (Original) A digital receiver according to Claim 50, wherein said summing network refines the at least one error signal by comparing a summation of estimates of each of the at least one next symbols as impaired by the corresponding multipath propagation to the plurality of received digitally modulated signals.

52. (Original) A digital receiver according to Claim 51, wherein said summing network refines the at least one error signal by comparing the summation of estimates of the at least one next symbols as impaired by the corresponding multipath propagation to the at least one error signal resulting from at least one previous comparison.

53. (Original) A digital receiver according to Claim 48, wherein estimating the multipath propagation impairments of each of the plurality of received digitally modulated signals is based upon a respective adaptive algorithm.

54. (Original) A digital receiver according to Claim 48, wherein estimating the at least one symbol of each of the

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plurality of received digitally modulated signals is based upon a respective adaptive algorithm.

55. (Original) A digital receiver according to Claim 48, wherein estimating the multipath propagation impairments is based upon training waveforms embedded in the plurality of received digitally modulated signals.

56. (Original) A digital receiver according to Claim 48, wherein estimating each of the at least one symbols is based upon training waveforms embedded in the plurality of received digitally modulated signals.

57. (Original) A digital receiver according to Claim 48, wherein estimating remaining symbols of each of the plurality of received digitally modulated signals is based upon linear estimation.

58. (Original) A digital receiver according to Claim 48, wherein the plurality of received digitally modulated signals comprises at least one of a digital broadcast television signal, a digital broadcast radio signal, a digital cellular telephone signal, and a digital wireless local area network (LAN).

59. (Original) A digital receiver according to Claim 48, wherein each of the plurality of received digitally modulated signals comprises a digitally serial modulated signal.